

REDESCRIPTION OF *CICINDELA SPECULANS* BATES AND ITS RELATIONSHIP TO OTHER NEOTROPICAL *CICINDELA* (COLEOPTERA: CICINDELIDAE)¹

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ABSTRACT: The original description of *Cicindela speculans* Bates is incomplete and in error in respect to the maculation, elytral microserrulations, and shape of the aedeagus. This species has been assigned inaccurately to the subgenus *Cylindera*. The sculpturing of the head and thorax and the apical hook of the aedeagus indicate that *C. speculans* is related most closely to *C. hemichrysea* Chevrolat of the *C. argentata* Fab. species complex, subgenus *Brasiella*. The male syntype is redescribed and illustrated.

Bates (1890) described *Cicindela speculans* from a male and female collected by H.H. Smith in Omilteme, Guerrero, Mexico, el. 8000 ft. Bates indicated that the maculation consists of a humeral lunule, basal portion of the middle line, and marginal line which are mirror-like or shining. The apical margins of the elytra were described as being non-serrulate. Bates believed that *C. speculans* was most closely related to *C. praecisa* Bates.

Cazier (1954) presented a taxonomic review of the Mexican *Cicindela* but representatives of some species, including *C. speculans*, were not available to him. He indicated in a footnote that it would probably key out beyond couplet 37 but did not otherwise key the species. His illustration was copied from Bates (1890) and follows it in respect to the maculation. Cazier stated that *C. speculans* was probably more closely allied to *C. viridisticta* Bates than to *C. praecisa* on the basis of the smooth lateral elytral margins and non-serrate elytral apices.

Rivalier (1954) in this division of the American *Cicindela* tentatively placed *C. speculans* in the subgenus *Cylindera*, also without examining specimens.

Recently I have examined the male syntype of *C. speculans* in connection with studies of Mexican and Neotropical cicindelids and found that Bates' observations pertaining to the maculation were incomplete and that his description of the elytral apices as being non-serrulate was in error. This error probably caused Cazier and Rivalier to misplace *C. speculans* in respect to its relationship with other Mexican *Cicindela*. *Cicindela speculans* is redescribed, illustrated, and its position within *Cicindela* is determined more accurately in this paper.

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Cicindela speculans Bates

(Figures 1, 2, 3, 4)

Head: Distinctly wider than thorax, deeply excavate between eyes. Labrum unidentate, convex, tan to creamy white; anterior margin narrow, dark brown, medially produced; with single irregular row of 8 submarginal setae; length slightly more than half width. Antenna having basal 4 segments cupreous with green reflections, scape with 1 erect subapical seta, several erect setae on segments 3 and 4; distal 7 segments ferrugino-testaceous, covered with fine setae. Clypeus dark brown, glabrous, finely alutaceous. Gena dark greenish black, shining, glabrous, shallowly striate. Frons and vertex brown, concentrically striate, becoming rugose toward posterior margin, bare except for 1 pair anterior supraorbital setae and 1 pair medial supraorbital setae.

Thorax: Pronotum same color as vertex of head, widest at apical third, narrowest at base, without posterior angles, obliquely striate anteriorly and posteriorly, becoming rugose medially, with scattered decumbent setae laterally and anteriorly; median longitudinal line shallowly impressed, represented by broad depressions at anterior and posterior ends; anterior and posterior transverse lines obscure. Sternal region smooth, shining, dark greenish black; proplura, prosternum bare; mesepisternum, mesepimeron each with 1-2 suberect setae; mesosternum bare; metepisternum with 2-3 suberect setae at anterior margin, 5-7 suberect setae at posterior margin; metepimeron bare; metasternum with 30 or more suberect setae. Legs with pro- and mesocoxae having several setae on anterior half, bare posteriorly; protochanter with single subapical seta; femora greenish bronze with cupreous reflections, becoming testaceous at apex, setae sparsely arranged in longitudinal rows; tibiae testaceous, becoming darker toward apex, with rows of sparse stout suberect setae; tarsi testaceous with violaceous or green reflections.

Abdomen: Venter dark greenish black; with few scattered, fine, suberect setae; setae numerous at apical margin of 6th segment.

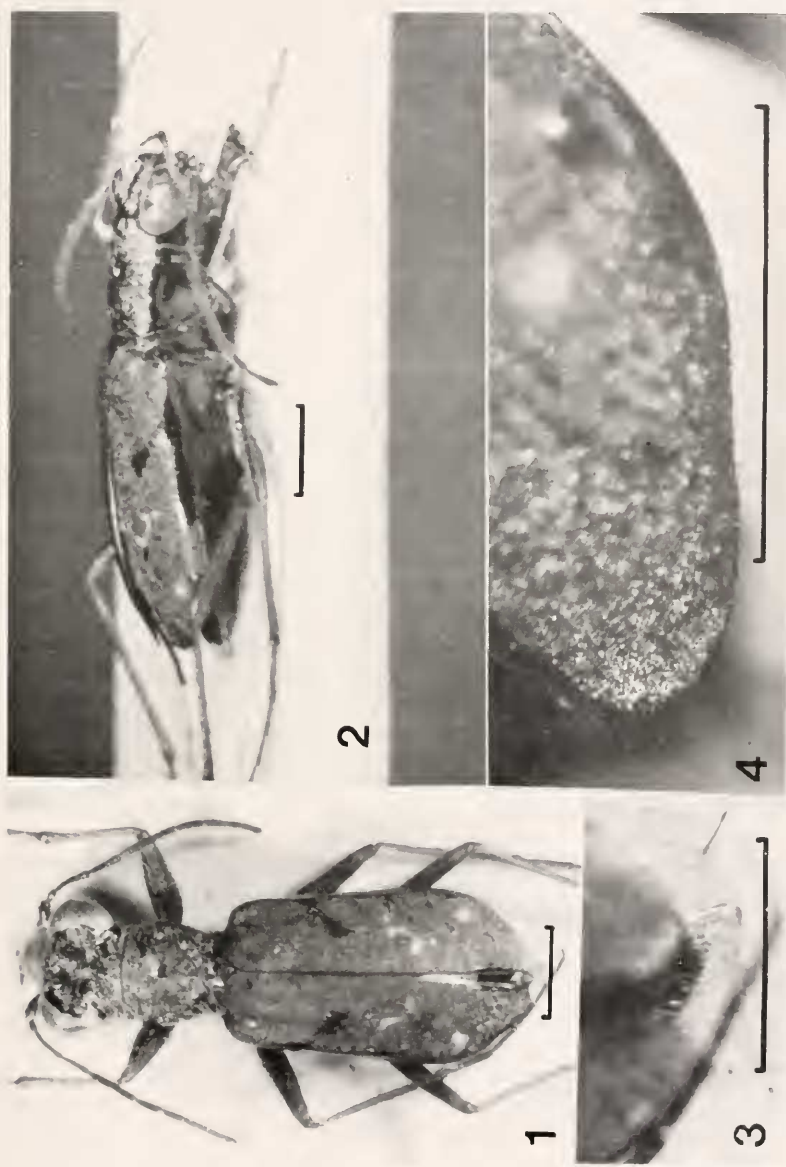
Elytra: Colored as vertex, granulate-punctate; punctures shallow, green, frequently confluent; foveae absent; gradually widened to apical 1/4, then narrowing until just before apex, then turned obliquely anteriorly; apex with short spine. Maculation with humeral lunule, marginal line and base of middle line connected, shining brownish black; medial portion of middle line white, transverse for half elytral width, bending apically, then returning medially forming an oblique C; marginal line ending just behind junction with middle line; basal portion of apical lunule present as white spot separated from lateral margin by 1-1.5 times its diameter. Apical 1/5 of elytra finely microserrulate.

Genitalia: Apex of aedeagus of σ syntype protruding, apex hooked at right angle, length of hook 1-1/2 times length of metathoracic tarsal claw.

Measurements: (in mm): Labrum width 0.78, labral length 0.41, head width 1.59, greatest width between eyes 1.04, pronotal width 1.18, pronotal length 1.04, elytral length (apex of scutellum to apex) 3.33, total elytral length 3.52, metathoracic tibial length 2.26, total length (frons to elytral apex) 5.38, apical hook of aedeagus 0.22.

Label data (from top to bottom): 1) (disc with red margin - printed) Type; 2) (printed) Sp. figured.; 3) (printed) Omilteme, Guerrero, 8000 ft., July, H.H. Smith; 4) (handwritten) *speculans* Bates σ ; 5) (inverted - printed) T.E.S.; 1890.

Diagnosis: *Cicindela speculans* is easily distinguished from most Mexican and Central American *Cicindela* on the basis of its small size and bicolored maculation (Figs. 1, 2). It is rivaled in size by *C. hemichrysea* Chevrolat, *C. viridisticta* Bates and *C. wickhami* W. Horn. It can be distinguished from *C. viridisticta* by having apical microserrulations (Fig. 4). It can be distinguished from *C. hemichrysea* and *C. wickhami* by the bicolored,



Figs. 1-4. *Cicindela speculans* Bates, male syntype (scale line = 1 mm). Fig. 1: dorsal habitus, Fig. 2: lateral habitus, Fig. 3: apex of median lobe, Fig. 4: microserrations on lateral apical margin, right clytron.

almost complete maculation. *Cicindela hemichrysea* usually has greatly reduced maculation, typically represented by the internal portion of the middle line and basal portion of the apical lunule which are white. *Cicindela wickhami* likewise has totally white maculation. The female syntype of *C. specularis* in the BMNH was examined by G.G. Kibby, and the bicolored maculation is similar to that of the male (pers. comm.).

DISCUSSION

Bates (1890) did not completely describe the maculation of *C. specularis*. It was illustrated as being totally dark. Furthermore, the elytral apices were described as being non-serrulate when in fact they are distinctly microserrulate. Cazier (1954) perpetuated the error with his discussion and copy of Bates' illustration of *C. specularis*. These authors believed that *C. specularis* is most closely related to *C. praecisa* or *C. viridisticta*. Rivalier (1954) placed *C. specularis* (as *specularis*) in the genus *Cylindera* without having seen specimens. He also placed *C. praecisa* and *C. viridisticta* in *Cylindera*. The genera used by Rivalier are recognized only as subgenera by most American cicindelid specialists. In this same paper Rivalier described the genus *Brasiella* as containing species of small size (around 7 mm in length) with a short labrum having 6-10 submarginal setae, protruding eyes, elytra with metallic spots, and often fragmented or partially reduced maculation. Furthermore, Rivalier states that the genus is best defined by the shape of the aedeagus which is almost always provided with a sharp, right-angled hook and by the absence of a flagellum in the internal sac. These characters, with the exception of those of the internal sac, which was not dissected, are all possessed by *C. specularis*.

In a subsequent paper (Rivalier 1955) *Brasiella* is divided into 3 species groups based on genitalic characters. 1) The typical (*C. argentata* Fab.) species complex is characterized by the distinct, right-angled aedeagal hook and by all 4 components of the internal sac being strongly sclerotized with the arciform piece being spiny and oriented longitudinally. The 13 species of this group, including *C. hemichrysea* (*C. argentata hemichrysea* in Cazier (1954)), range from the southwestern US to Paraguay and Argentina. 2) A Brazilian group containing 2 species is characterized by a sharply hooked aedeagus, a large oblique arciform piece in the internal sac and a lightly sclerotized foliaceous appearing shield-shaped piece in the internal sac. 3) A Central and South American group containing 2 species is characterized by the apical hook of the aedeagus being reduced or absent and by the complicated architecture of the internal sac.

On the basis of the shape of the aedeagus and distributional data, in

addition to its similarity in respect to head and pronotal sculpturing, *C. specularis* appears to be most closely related to the *C. argentata* species complex and probably is nearest to *C. hemichrysea*.

Cicindela specularis will key to *C. argentata* (= *C. hemichrysea*) in couplet 43 of Cazier (1954). These 2 species can be separated as follows.

- A. Maculation unicolored, white; maculation usually reduced, occasionally nearly complete but without marginal line; elytral coloration black or dark brown. *C. hemichrysea*
- A'. Maculation bicolored (Figs. 1, 2); marginal line, humeral lunule and base of middle line shining brownish black, remainder of middle line and remnant of apical lunule white; maculation nearly complete, with marginal line; elytral coloration brown. *C. specularis*

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INSECT AND SPIDER COLLECTIONS OF THE WORLD

A new work entitled "Insect and Spider Collections of the World" is now being compiled by Dr. Ross H. Arnett, Jr., Florida State Collection of Arthropods, P.O. Box 1269, Gainesville, FL 32601, Dr. G. Alan Samuelson, Bishop Museum, P.O. Box 19000-A, Honolulu, HI 96819, Drs. Robert E. Woodruff and John B. Heppner, Division of Plant Industry, P.O. Box 1269, Gainesville, FL 32601, and Dr. Gerardo Lamas, Museo de Historia Natural "Javier Prado," Universidad Nacional Mayor de San Marcos, Aptd. 434, Lima 14, Peru.

The purpose of this work is to produce a standard list of museums and collections of the world containing specimens of insects and spiders useful for study of systematists; to provide a suitable coden for each collection for use in journals and monographs to refer to the place of deposit of specimens of insects and spiders; and to describe these collections, including the size, type of housing, and similar data.

Questionnaires are being sent to all institutions listed in previous works. Any collections not included in previous lists may be added by writing to the compilers for information and a questionnaire.